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| APPLICATION NO.                 | FILING DATE   | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------------|---------------|----------------------|---------------------|------------------|
| 10/531,871                      | 05/20/2005    | Jari Liimatainen     | 032221-059          | 5959             |
| 21839                           | 7590          | 12/11/2008           |                     |                  |
| BUCHANAN, INGERSOLL & ROONEY PC |               |                      |                     | EXAMINER         |
| POST OFFICE BOX 1404            |               |                      |                     | ZHOU, WEIPING    |
| ALEXANDRIA, VA 22313-1404       |               |                      | ART UNIT            | PAPER NUMBER     |
|                                 |               |                      | 1793                |                  |
|                                 |               |                      |                     |                  |
| NOTIFICATION DATE               | DELIVERY MODE |                      |                     |                  |
| 12/11/2008                      | ELECTRONIC    |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

|                              |                                      |  |
|------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/531,871 | <b>Applicant(s)</b><br>LIIMATAINEN, JARI |
|                              | <b>Examiner</b><br>WEIPING ZHU       | <b>Art Unit</b><br>1793                  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 14 November 2008.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-5,8-17 and 22-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-5, 8-17 and 22-30 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

### **DETAILED ACTION**

#### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 22, 2008 has been entered.

#### ***Status of Claims***

2. Claims 1-5, 8-17 and 22-30 are currently under examination wherein claims 1, 5 and 14-17 have been amended and claim 30 has been newly added in applicant's amendment filed on September 22, 2008. Claims 6, 7 and 18-21 have been previously cancelled.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5, 8-17 and 22-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oskarsson et al. (US 4,869,974) in view of Friedman et al. (US 5,445,787).

With respect to claim 1, Oskarsson et al. ('974) discloses a method for manufacturing composite material parts, wherein the composite material comprises a tough ferrous material (i.e. Fe > 50 wt. % as claimed) and a hard material rich in hard constituents (abstract); a powder blank of the composite material is produced by cold isostatic pressing (col. 4, lines 33-38); the blank is extruded (i.e. hotworked) up to an extrusion ratio of at least 6 and the extrusion ratio is defined as the initial area of the body relative to the final area of the body (col. 2, lines 5-26).

Oskarsson et al. ('974) does not disclose that the powder mixture contains a total of 3-20 wt. % of carbide-forming additives as claimed. However, it is well held that discovering an optimum value of a result-effective variable involves only routine skill in the art. *In re Boesch*, 617, F.2d 272, 205 USPQ 215 (CCPA 1980). In the instant case, the contents of C and Cr (i.e. a carbide-forming element) in the powder mixture are result-effective variables, because they would directly affect the hardness of the material as disclosed by Oskarsson et al. ('974) (col. 3, lines 8-32). Therefore it would have been obvious to one skilled in the art to have optimized the contents of C, Cr and carbide-forming additives of Oskarsson et al. ('974) in order to achieve desired hardness of hard and tough materials and the hardness distribution within the composite material parts. See MPEP 2144.05 II.

Oskarsson et al. ('974) does not disclose that the powder blank is formed by hot isostatic pressing as claimed. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the cold isostatic pressing of Oskarsson et al. ('974) with the claimed hot isostatic pressing with expected success,

because they are functionally equivalent in terms of densifying powders as disclosed by Friedman et al. ('787) (col. 1, lines 21-47). See MPEP 2144.06.

With respect to claim 2, Oskarsson et al. ('974) discloses that the tough ferrous material and the hard material may be in the powder forms (col. 4, lines 33-38).

With respect to claims 3, 8, 9 and 10, Oskarsson et al. ('974) discloses the hard material is a mixture of steel with other alloying elements (i.e. claimed ferrous material) and a ceramic material (a nitride), whereby the hardness of the material is greater than 800-900 HV (i.e. greater than HRC 35 and HRC 50 as claimed) (col. 3, lines 8-19).

Oskarsson et al. ('974) in view of Friedman et al. ('787) does not disclose that the hard material contains not more than 30 wt. % of a metallic binder as claimed. However, the 0 wt. % of the low limit of the claimed content of the metallic binder does not require the presence of the binder.

With respect to claims 4 and 11-14, Oskarsson et al. ('974) discloses that the tough material is a ferrous or nickel based material (col. 1, lines 51-55), wherein the hardness of the material is 200-300 (i.e. less than 25 HRC and 35 HRC as claimed). Both hardnesses of the hard and tough materials of Oskarsson et al. ('974) overlap the claimed hardness ranges respectively. A prima facie case of obviousness exists. See MPEP 2144.05 I.

With respect to claims 5 and 15-17, Oskarsson et al. ('974) in view of Friedman et al. ('787) discloses that the amount of ceramic particles is 30-70 vol. % of the hard material (Oskarsson et al. ('974), col. 1, lines 34-40), which reads on the ceramic particle amount less than 50 wt. % of the powder mixture as claimed. Oskarsson et al.

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('974) in view of Friedman et al. ('787) does not disclose that the powder mixture contains 0.5-3.5 wt.% of C and 0.5-15 wt% of Cr as claimed. However, it is well held that discovering an optimum value of a result-effective variable involves only routine skill in the art. In re Boesch, 617, F.2d 272, 205 USPQ 215 (CCPA 1980). In the instant case, the contents of C and Cr (also a carbide-forming element) in the powder mixture are result-effective variables, because they would directly affect the hardnesses of the materials as disclosed by Oskarsson et al. ('974) (col. 3, lines 8-32). Therefore it would have been obvious to one skilled in the art to have optimized the contents of C, Cr of Oskarsson et al. ('974) in view of Friedman et al. ('787) in order to achieve desired hardness of hard and tough materials and the hardness distribution within the composite material parts. See MPEP 2144.05 II. The 0 wt. % of the low limits of the concentrations of Mo, Mn and Si in the claims 5 and 15-17 does not require the presences of these elements.

With respect to claim 22, Oskarsson et al. ('974) discloses that the hard material comprises carbide, nitrides, oxides, borides etc. (col. 1, lines 34-50).

With respect to claim 23, Oskarsson et al. ('974) discloses that the hotworking comprises rolling (col. 4, lines 7-12).

With respect to claims 24 and 25, the hot isostatic pressing step of Oskarsson et al. ('974) in view of Friedman et al. ('787) (Friedman et al. ('787), col. 1, lines 21-47) reads on the claimed features.

With respect to claim 26, Oskarsson et al. ('974) discloses that the hot-worked parts are heat-treated (col. 3, lines 8-19).

With respect to claim 27, Oskarsson et al. ('974) discloses that the hard material is mechanically joined to steel layers to form a sandwich structure with alternate lamellas (col. 3, lines 23-32).

With respect to claim 28, Oskarsson et al. ('974) discloses that the hard material is predensified (col. 4, lines 13-16).

With respect to claim 29, Oskarsson et al. ('974) discloses that the tough material has a hardness of about 200 HV (i.e. less than 25 HRC as claimed) (col. 3, lines 23-32).

With respect to claim 30, Oskarsson et al. ('974) discloses that the tough material is present in a volume proportion of about 50% (col. 2, lines 47-53), which is close to the upper limit of the claimed content range of the tough material.

***Response to Arguments***

4. The applicant's arguments filed on September 22, 2008 have been fully considered but they are moot in light of the new ground of rejection.

***Conclusion***

5. This Office action is made non-final. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

WZ

11/14/2008